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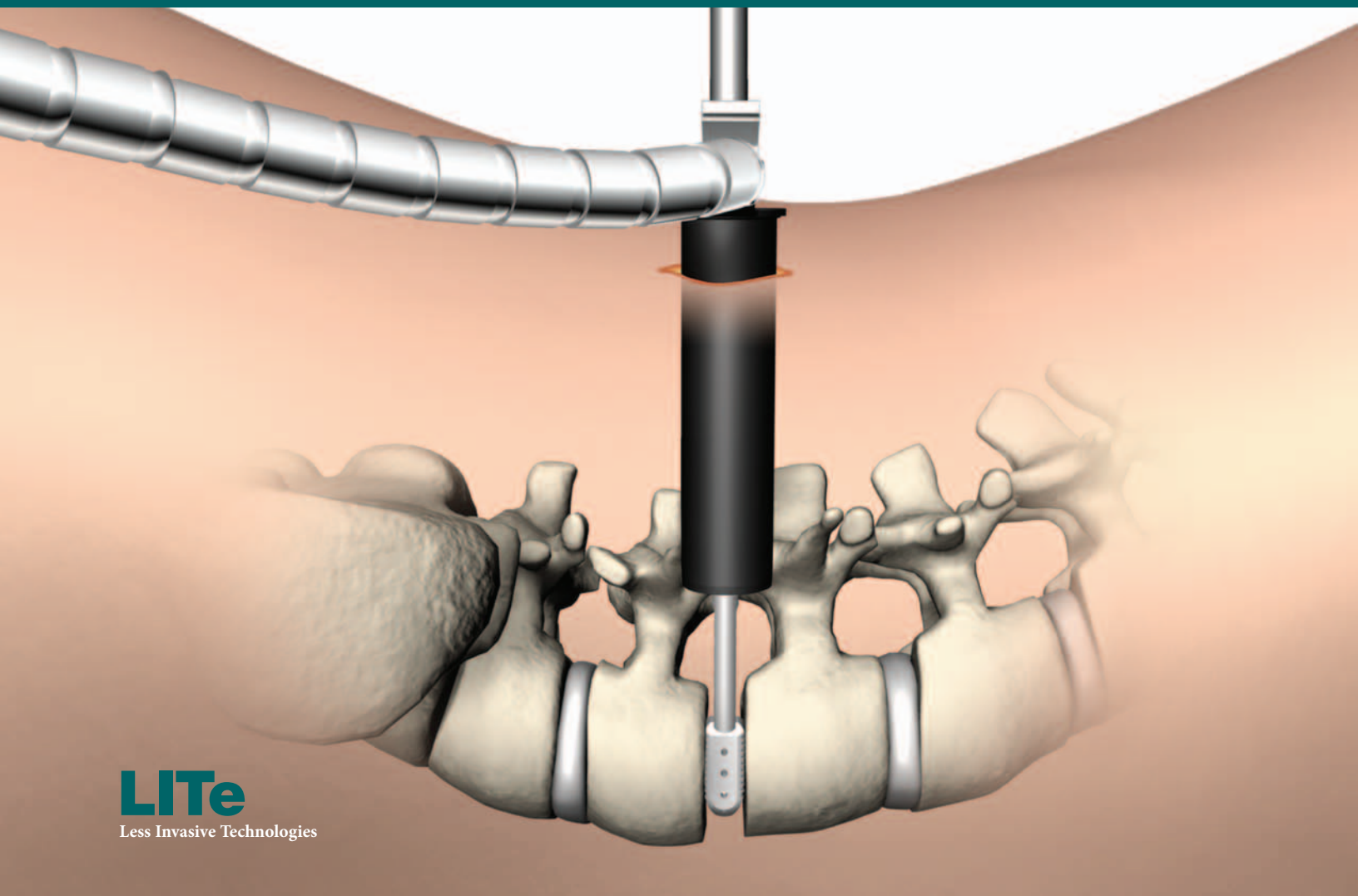
Spine

LITe Decompression Tubes
Surgical Protocol

- Minimally invasive approach
- Large selection of tubes
- Fast, rigid connection to bed



LITe
Less Invasive Technologies

LITe Decompression Tubes
Surgical Protocol

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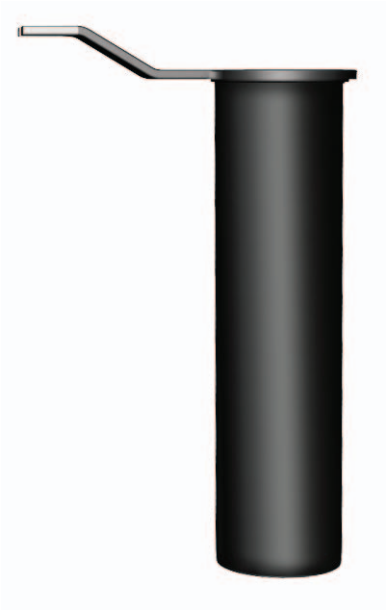

Acknowledgments

Stryker Spine wishes to thank the following physicians for authoring this surgical technique:

Terrence Julien, MD

Reginald Knight, MD

Jeffrey Roh, MD

Introduction

This Surgical Technique sets forth detailed, recommended procedures for using the LITe Decompression Tube System in order to perform a minimally invasive UniLIF procedure. It offers guidance that you should heed but, as with any such technical guide, each surgeon must consider the particular needs of each patient and make appropriate adjustments when necessary and as required.

The objective of all minimally invasive surgeries (MIS) is to replicate the clinical results of the corresponding open procedure. What sets MIS procedures apart from open procedures is that while delivering similar clinical results, these procedures have the potential to offer reduced intraoperative blood loss, reduced post operative mobilization times, and minimize postoperative consumption of orally administered narcotics.

The LITe Decompression Tube System was designed to provide a comprehensive minimally invasive tubular platform. This would complement the existing MANTIS, AVS PL-UniLIF, AVS PL and Reliance LITe platforms in order to perform minimally invasive spine procedures.

Key Design Features

- Minimally invasive approach.
- Non-reflective PVD coating.
- Large selection of tubes.
- Fast, rigid connection to bed.

LITe Decompression Tubes
Surgical Protocol

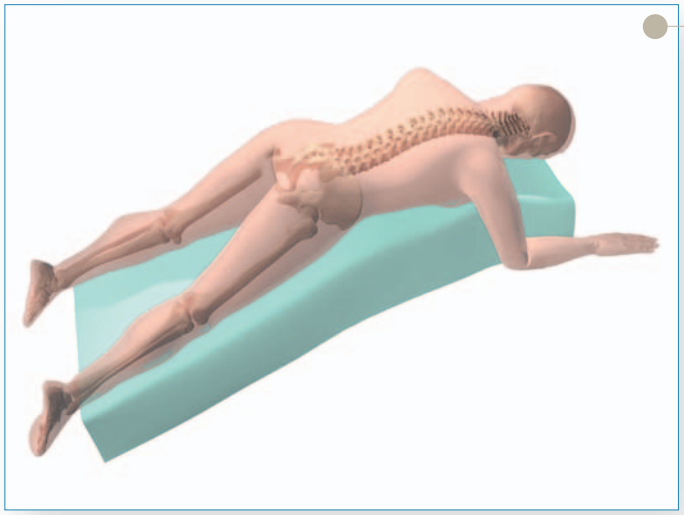

Figure 1

Patient Positioning

The LITe Decompression Tubes can be successfully used under local, epidural, spinal or general anesthesia. General anesthesia is commonly used since it is the most comfortable for the patient and allows immediate postoperative neurological assessment.

- The patient is prepped and draped in the usual sterile manner for posterolateral fusion with pedicle screw fixation.

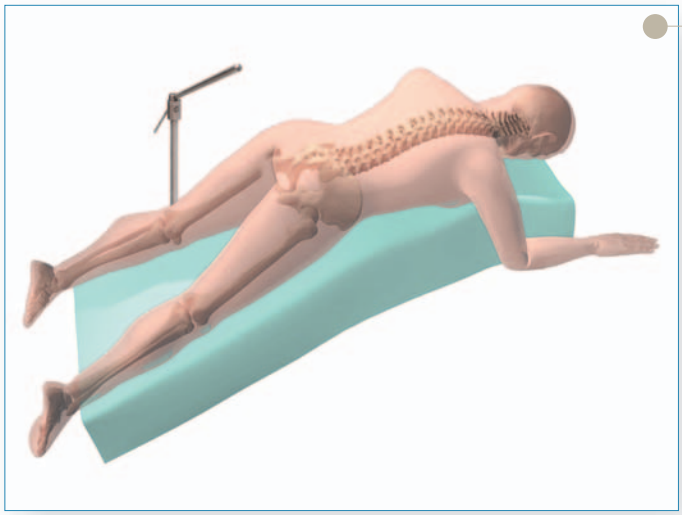

Figure 2

Arm Assembly Positioning

The Mediflex **Arm Post** mounts to the hospital bed rail. Check compatibility of the **Arm Post** to the hospital bed prior to surgery.

- Mount the **Arm Post** to the bed rail on the opposite side of surgeon near the patient's hip.
- Turn the **Arm Post** locking mechanism clockwise to secure it to the bed.

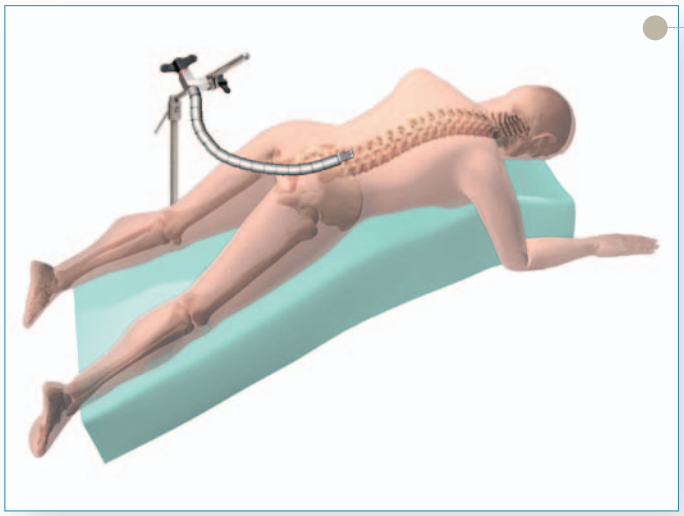

Figure 3

- Once secure, attach the **Snake Arm** to the **Arm Post** and lock into place.
- The **Snake Arm** should be positioned across the patient and wrap in front of the surgeon.

Note: For additional information see the Mediflex's Flex Arms™ Surgical User's Manual.

48250010
Guide Pin

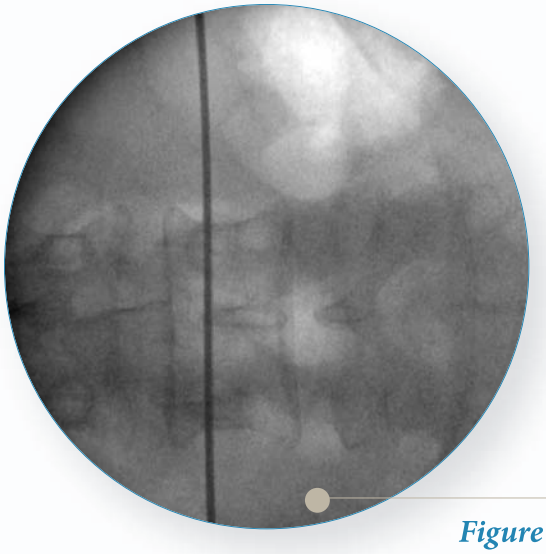

Figure 4A

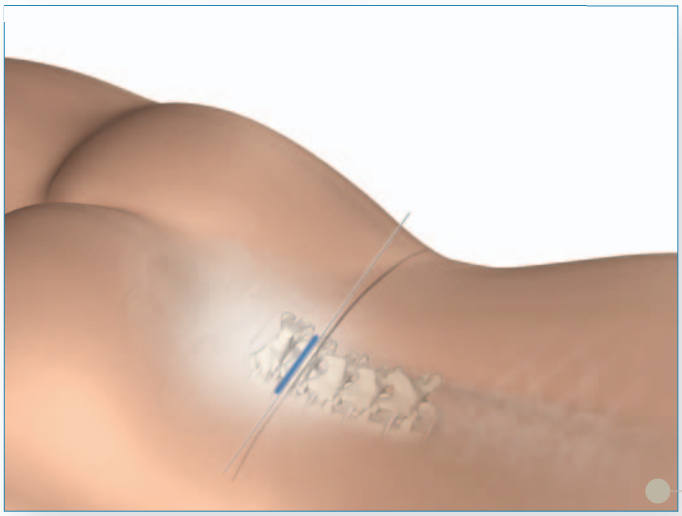

Figure 4B

Establishing Access

A/P images are used to confirm placement of the LITe Decompression Tube. The tube is delivered via a dilation system at approximately the same angle as the interbody device to be inserted. The following steps are taken to assure the correct positioning of the LITe Decompression Tube.

Markings

- Using A/P imaging, place the Guide Pin transversely across the mid-line of the cephalad pedicles.
- Draw a line extending several inches lateral to the pedicles.

LITe Decompression Tubes
Surgical Protocol

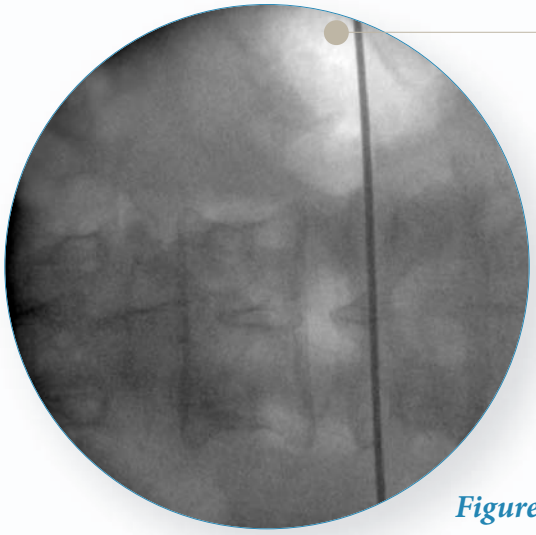

Figure 5A

- Repeat for caudal pedicles.

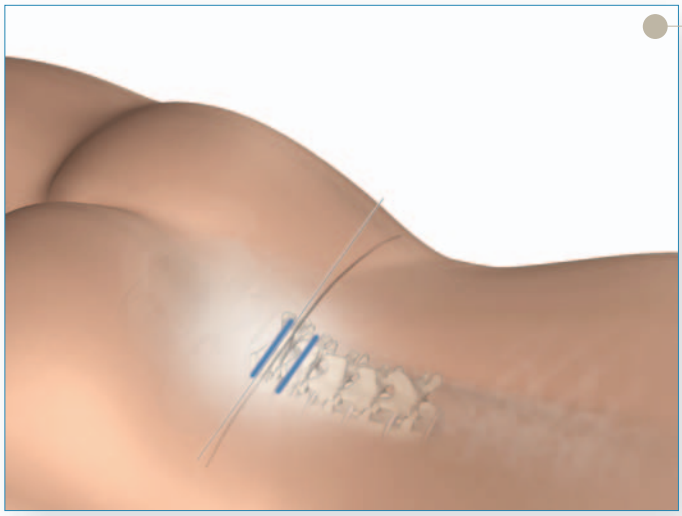

Figure 5B

Carefully determine the appropriate entry point and trajectory for the LITe Decompression Tube.

- For decompression the entry point is approximately 2cm off mid-line with a more medial trajectory.
- For a TLIF the entry point is approximately 4cm off mid-line with a more lateral trajectory.

Note: The entry point is typically at or cephalad to the accessory process (AP) on the transverse process.

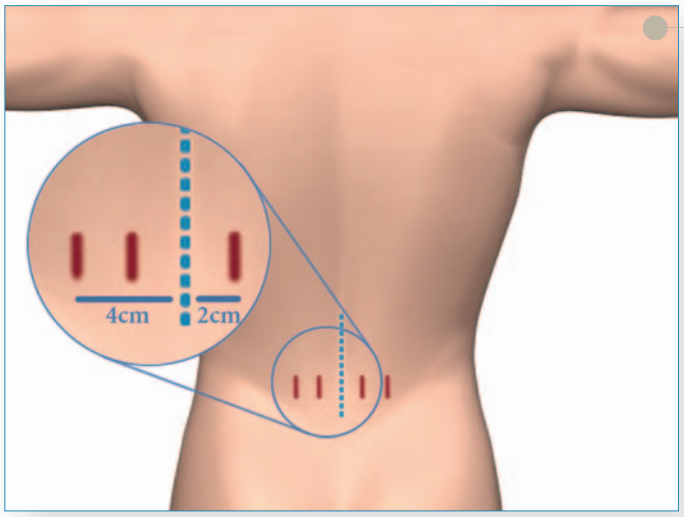

Figure 6

- An incision, the size of the tube to be used, is made parallel to the spine.
- The fascia can also be incised to make tissue dilation easier. This is optional and can be performed later if tissue dilation is difficult.

For this technique, we will demonstrate with a 26mm diameter Tube.

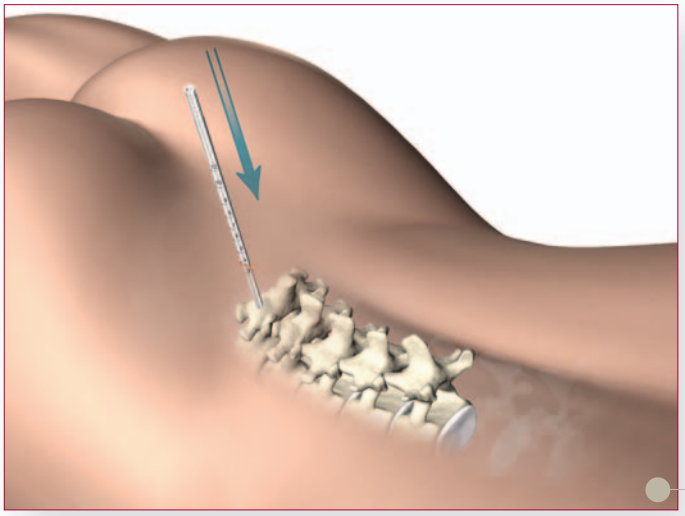

Figure 7

Dilation

- Place **Dilator 1** through the incision. Advance the dilator through the tissue while directing it toward the inferior aspect of the superior lamina under lateral imaging.
- The dilator is advanced through the lumbodorsal fascia.
- Location of the dilator is confirmed using lateral imaging. Use the dilator to palpate the lamina both in the sagittal and transverse planes. This confirms appropriate approach laterally.
- The tip of the dilator is used to sweep the paraspinal musculature off the laminar edge.

48080006
Dilator 1

LITe Decompression Tubes
Surgical Protocol

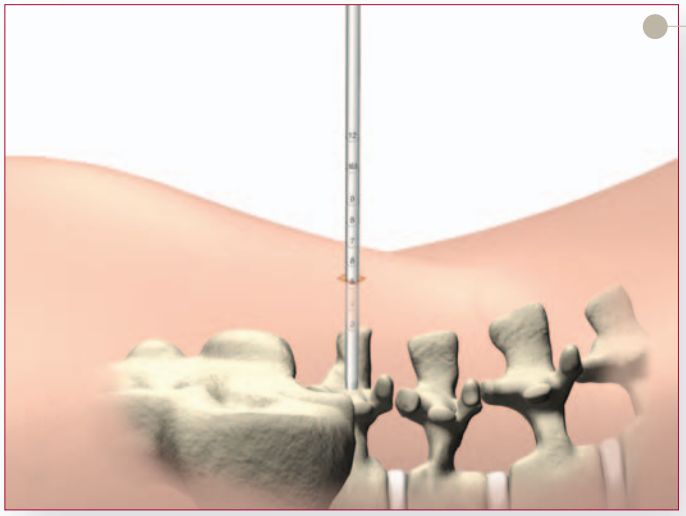

Figure 8

- Note the depth marking of the dilator in relation to the skin. The dilators have depth markings laser etched which correlate to the tube length.
- Choose the appropriate tube size based on where the skin meets the dilator.

Note: If the skin is between two markings on the dilator, choose the longer tube.

Note: By keeping the dilator tip in the subperiosteal space, this will help lessen bleeding.

Note: Feel, fluoroscopy, anatomical knowledge, review of preoperative images, and partial visualization may all contribute towards desired instrument placement accuracy.

Note: Great care must be taken to avoid penetration of the ligamentum flavum and inadvertent dural puncture with possible nerve injury or spinal fluid leak.

Note: If using the **Guide Pin** do not direct it lateral to the lamina or facet, which risks injury to the nerve root or deeper structures.

Note: To ensure that the **Guide Pin** is not bent, pass the Guide Pin through the cannulation in **Dilator 1**.

Note: Wipe guide pin after each use.

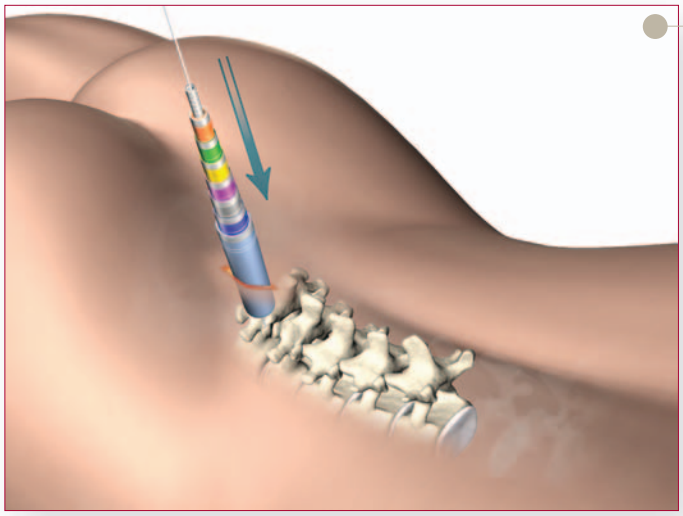

Figure 9

Subsequent Dilator Insertion

- Slide the subsequent dilators over Dilator 1 and into the incision.
- Use the subsequent dilators to penetrate and gently spread and dissect soft tissue down to the lamina.
- Match the color of the dilator with the color of the disc on the tube to ensure selection of the proper tube diameter. Laser markings on the dilators and tubes can also be used for proper selection.

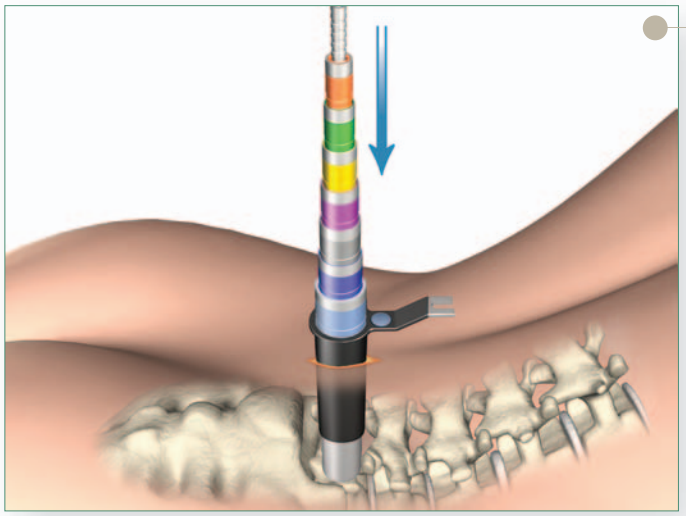

Figure 10

Tube Insertion

- Slide the tube over the dilators and dock on the lamina.

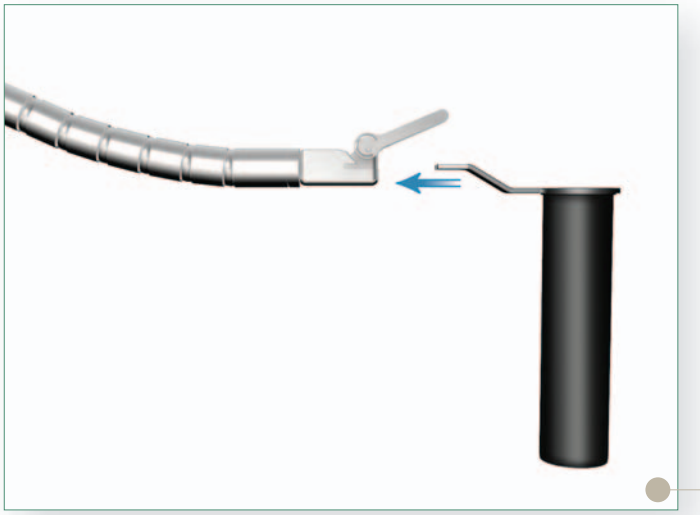

Figure 11A

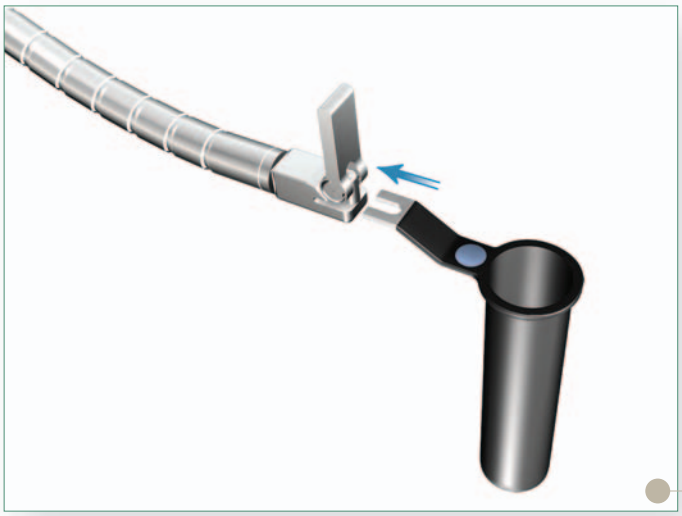

Figure 11B

▶ Insert the handle of the tube into the clamp of the **Snake Arm**.

Instrument Bar

48250010
Guide Pin

48080006
Dilator 1

48080230
Snake Arm

48080012
Dilator 2

48080014
Dilator 3

48080016
Dilator 4

48080018
Dilator 5

48080020
Dilator 6

48080022
Dilator 7

48080026
Dilator 8

See Catalog
Decompression Tube

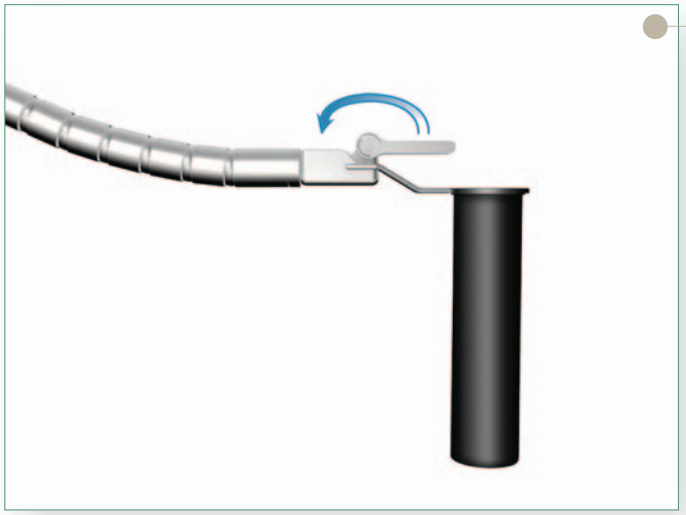

Figure 12

- Secure the tube by closing the clamp.

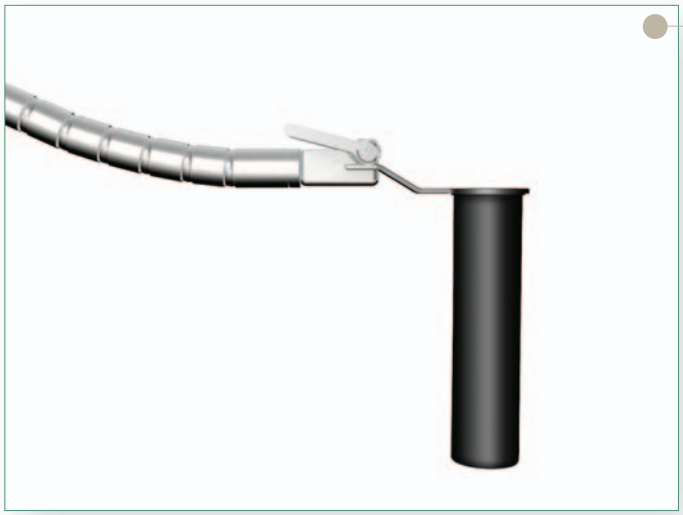

Figure 13A

Note: To ensure proper locking, the handle of the tube should be inserted entirely into the Snake Arm clamp. The engagement feature of the tube is not coated with the non-reflective PVD coating, and should not be seen when properly inserted into the clamp.

Figure 13B

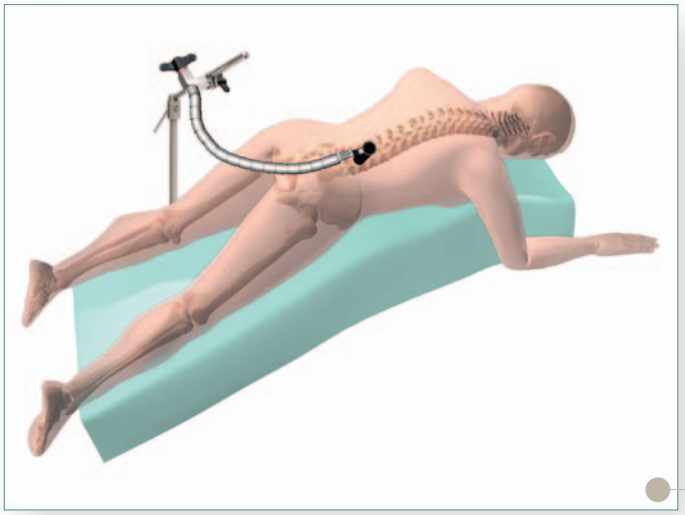

Figure 14

- Secure the arm assembly by tightening the knobs.

Note: If repositioning of the tube is necessary to expose the laminar edge, the tube can be wanded over the pathology using the dilators. Once in the proper location, the arm assembly is tightened.

Note: Check fitment of dilators and tubes prior to surgery for any potential of deformation during handling or cleaning process.

Instrument Bar

See Catalog
Decompression Tube

48080230
Snake Arm

LITe Decompression Tubes
Surgical Protocol

Disc Preparation and Removal

Stryker Spine offers a comprehensive set of Reliance LITe decompression instruments. This Reliance LITe set consists of:

- Penfield Elevators: Inspection of the surgical site between dura and bone.
- Nerve Hooks: Retract nerve during surgical procedure. Blunt tip to help protect nerve.
- Nerve Retractors: Retract compressed nerve root away from disc space.
- Nerve Probes: Inspection of the surgical site. The ball tip helps to prevent damage of nerve.
- Woodson Probes: Exploration of the disc space.
- Suction Tips: Provide suction capabilities to evacuate fluid and debris from surgical site.
  - Kerrison Rongeurs: Remove disc material, cartilage and hard connective tissue.
  - Bovie: Dissect soft tissue.
- Bi-Polar: Dissect soft tissue.

Penfield Bayoneted

Nerve Hook Bayoneted

Woodson Probe Bayoneted

Ball Probe Bayoneted

These instruments are designed with:

- Bayoneted working shafts provide greater visibility while working through the Tube.
- Working lengths of 16cm or more for surgical procedures in the lower posterior thoracic and lumbar spine.
- Non-reflective coating to further increase visibility by reducing glare, while working through the Tube.
- Handle profiles and shaft diameters minimized to provide greater visibility.
- Tips rounded for safety.

Note: Instruments should be visually and physically checked for fit with each tube.

Nerve Root Retractor

Suction Tip with Bend

Micro Scissor

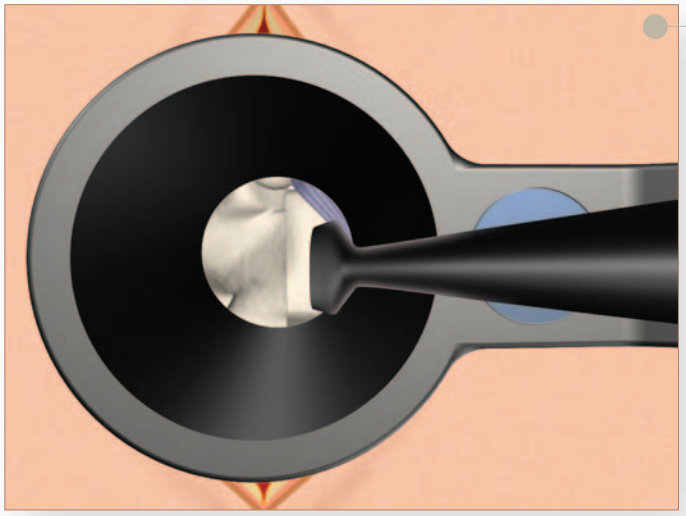

Figure 15

Disc Preparation and Removal

- Identify the offending disc material.
- Enter the disc space at the vertebral margins.
- Resect the posterior lip of the vertebral body. This will simultaneously help free the cartilaginous endplate and provide direct entry to the disc space.
- Remove the offending disc material with a pituitary rongeur.
- Intradiscal and extradiscal work can be executed, as one would normally perform during a microdiscectomy.
- The nerve root and spinal canal are explored to ensure the decompression is complete. Once the nerve root is decompressed, irrigate the disc space thoroughly.

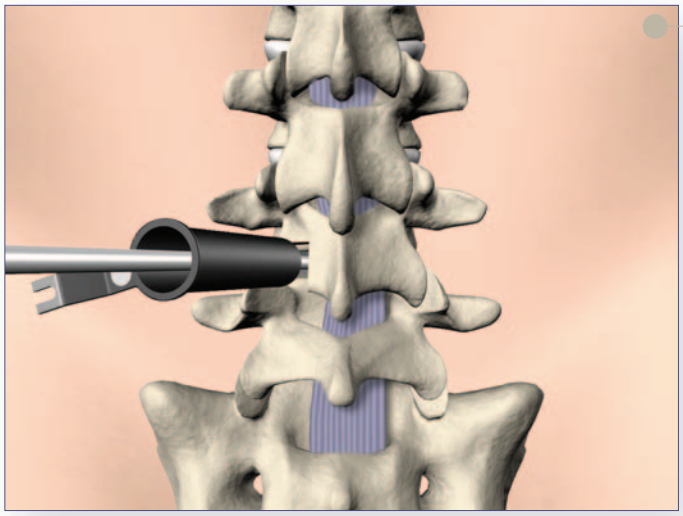

Figure 16A

Interbody Fusion

- A shaver (TPS Saber; Stryker Endoscopy) is ideal to free the cartilaginous endplates while preserving the bony endplate.

Note: Care must be taken when using a high speed burr. Contacting the tube with a high speed drill may reduce the life of the tube.

- If an interbody fusion is to be performed, complete the discectomy, leaving the anterior and lateral aspects of the annulus intact.

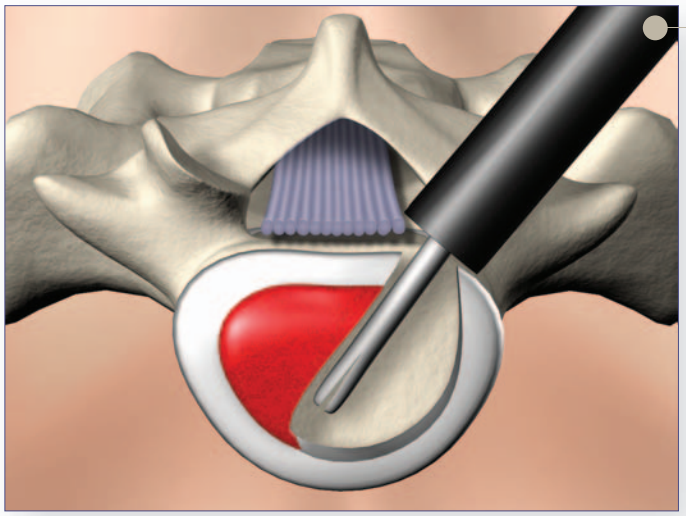

Figure 16B

Instrument Bar

See Catalog
Decompression Tube

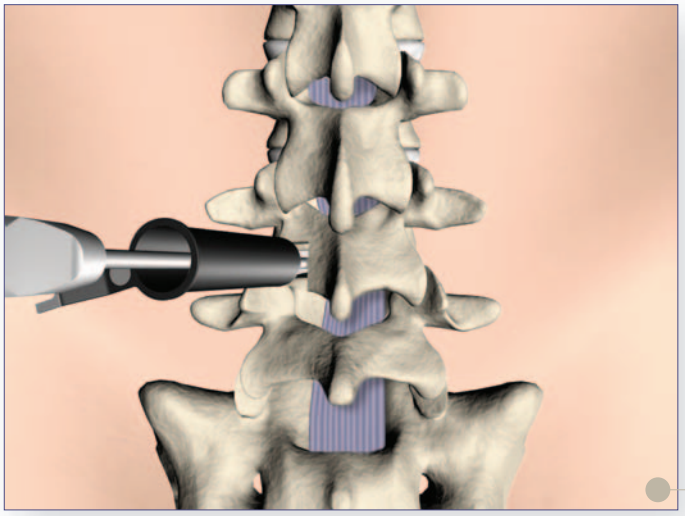

Figure 17A

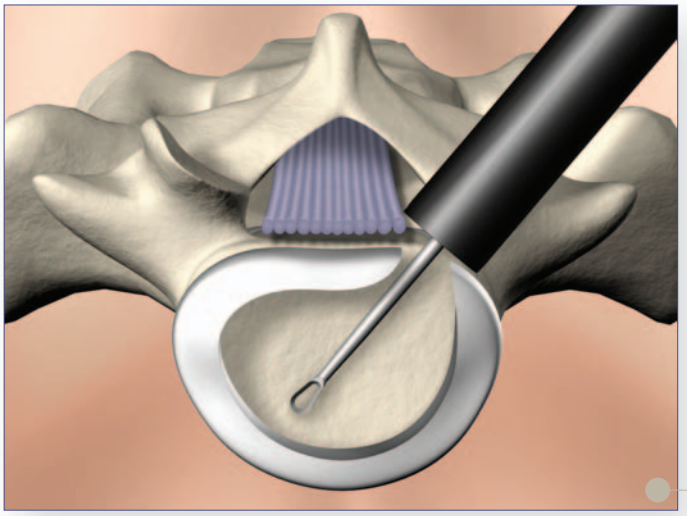

Figure 17B

▶ Prepare the endplate for interbody fusion.

LITe Decompression Tubes
Surgical Protocol

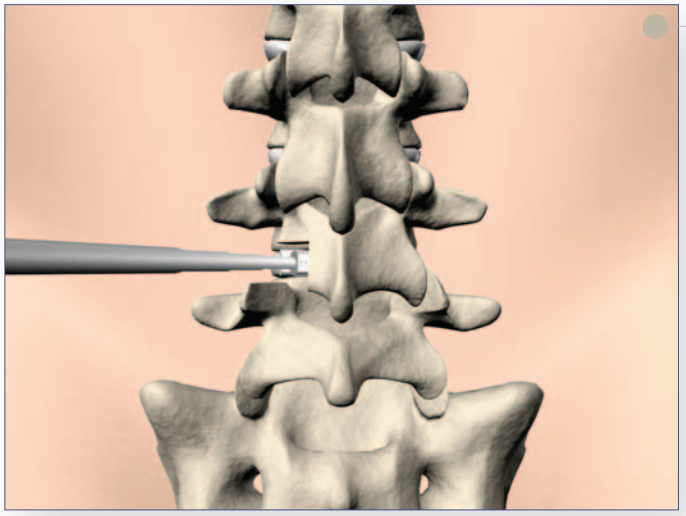

Figure 18A

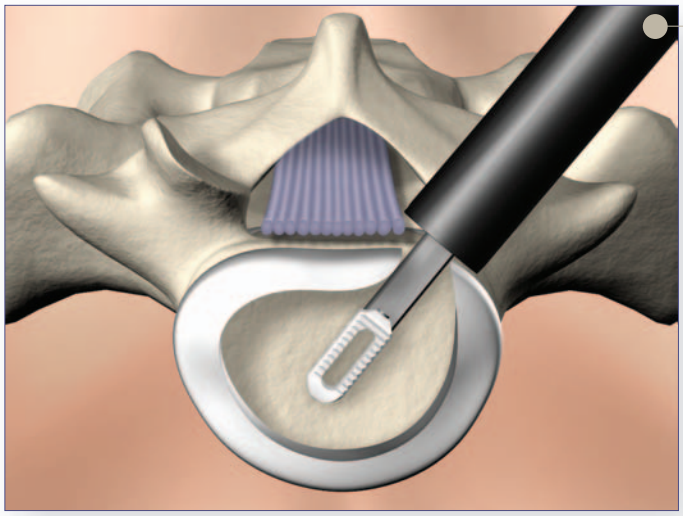

Figure 18B

Figure 19

Graft Insertion

- Insert the interbody device. For detailed instructions, please see the AVS PL and AVS PL-UniLIF surgical technique. Bone graft may be placed lateral, ventral and/or dorsal to the implanted interbody device.

Closure

- Examine the site for bleeding.
- It is recommended that a visible inspection of the surgical site be performed followed by irrigation and suction post procedure to ensure that no existing implantable materials are left in-situ.
- Remove the tube from the incision.
- The muscle and fascia close as the Tube is withdrawn through the dilated tissues.
- If accessible, close the fascia with one or two interrupted sutures. The subcutaneous tissue is closed in an inverted manner. A subcuticular closure is performed. Cover the skin edge with clear waterproof dressing.

Contralateral Side

- Fixation on the contralateral side can be performed with the MANTIS Spinal System.

Instrument Bar

See Catalog
Decompression Tube

LITe Decompression Tubes
Surgical Protocol

Catalog #	Description
Instrument Part Numbers	
48081603	Tube Ø16mm x 3cm
48081604	Tube Ø16mm x 4cm
48081605	Tube Ø16mm x 5cm
48081606	Tube Ø16mm x 6cm
48081607	Tube Ø16mm x 7cm
48081608	Tube Ø16mm x 8cm
48081609	Tube Ø16mm x 9cm
48082203	Tube Ø22mm x 3cm
48082204	Tube Ø22mm x 4cm
48082205	Tube Ø22mm x 5cm
48082206	Tube Ø22mm x 6cm
48082207	Tube Ø22mm x 7cm
48082208	Tube Ø22mm x 8cm
48082209	Tube Ø22mm x 9cm
48082603	Tube Ø26mm x 3cm
48082604	Tube Ø26mm x 4cm
48082605	Tube Ø26mm x 5cm
48082606	Tube Ø26mm x 6cm
48082607	Tube Ø26mm x 7cm
48082608	Tube Ø26mm x 8cm
48082609	Tube Ø26mm x 9cm

Catalog #	Description
Instrument Part Numbers	
48250010	Guide Pin
48080006	Dilator 1 (Ø6mm OD x 27.5cm)
48080012	Dilator 2 (Ø10.75mm OD x 25cm) for Ø12mm tube
48080014	Dilator 3 (Ø12.75mm OD x 23cm) for Ø14mm tube
48080016	Dilator 4 (Ø14.75mm OD x 21cm) for Ø16mm tube
48080018	Dilator 5 (Ø16.75mm OD x 19cm) for Ø18mm tube
48080020	Dilator 6 (Ø18.75mm OD x 17cm) for Ø20mm tube
48080022	Dilator 7 (Ø20.75mm OD x 15cm) for Ø22mm tube
48080026	Dilator 8 (Ø24.75mm OD x 13cm) for Ø26mm tube
48080230	Snake Arm
48250240	Arm Post
48080000	Container
48080001	Auxiliary Container

Notes

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